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NASA Conducts Near Around-the-World Balloon Flight, Test Balloon Technologies

Larger than a football field and flying approximately 120,000 feet above Earth, a NASA scientific balloon has completed the first nearly around-the-world flight in the northern hemisphere.

The primary purpose of the flight was to test balloon technologies that will allow scientists to fly payloads for long durations in the northern hemisphere.

The helium-filled balloon departed Fairbanks, AK, flying west at 10:22 a.m. EDT, June 23, and landed nearly 13 days later at 3:47 a.m. EDT, July 6, in northern Canada, 300 miles east of Inuvik.

The flight took the balloon over several countries including Russia, Sweden and Norway. Recovery of the payload was expected to be completed by July 9.

NASA Scientific Balloon Program personnel are ecstatic with the results of the flight. Bobby Nock, Balloon Programs Branch, said, "The flight was excellent. It gave us a thorough test of the balloon systems. In addition, the international cooperation required to allow the flight to proceed through the airspace of various countries went very well."

The mission went so well, with extremely small variances in the planned flight, according to Joel Simpson, Balloon Solar Pointing System Project Manager at Wallops, that testing of automatic systems had to be initiated from the ground. These systems included a ballast system that would drop ballast automatically to correct for a decrease in flight altitude and a solar pointing system which is designed to keep solar arrays continuously pointed at the Sun.

Other technologies that were tested included instruments for determining balloon position and telecommunications for maintaining the health and welfare of the flight systems.

In addition, to the balloon systems that were tested, a cosmic ray experiment from the NASA Marshall Space Flight Center was flown. The passive experiment was retrieved and is being returned to Marshall for analysis.

The experiment accounted for 1,300 pounds of the total 6,000 pounds of equipment suspended beneath the balloon, which is the most ever flown on any long duration balloon mission.

According to Dr. Tom Parnell, the principal investigator from Marshall, the experiment is similar, but smaller, to experiments previously flown on long duration balloons in Antarctica. "We view this as an opportunity to assess the suitability of this new ballooning route for future emulsion chamber experiments," he said.

Dr. Jack Tueller, from the Goddard, Greenbelt, chairperson of the NASA Scientific Balloon Working Group, said, "Astronomy experimenters who are interested in targets in the northern sky cannot make observations from Antarctica because the Earth is in the way. This new capability more than doubles the fraction of the sky that can be observed during a long duration flight. This is a very significant enhancement of the existing program."

The launch and recovery of the balloon mission were conducted by personnel from the National Scientific Balloon Facility, Palestine, TX.

Nock said the lessons learned in developing and conducting the northern hemisphere long duration balloon flight will be valuable in the development of NASA's goal to evolve towards ultra-long duration balloons with up to 100-day mission capability.

According to Tueller, "The ultra-long duration capability with super-pressure balloons will extend the duration of flights by another factor of 10 over the existing long duration program. Superpressure balloons will enable low latitude flights that are crucial for gamma-ray and atmospheric measurements. The super-pressure vehicle will provide enormously improved altitude stability which will enhance the science that can be performed from balloons in all fields."

Asteroid Mathilde Reveals Her Dark Past

More than 100 years after her discovery, asteroid 253 Mathilde has been sharing her secrets with scientists in the Science Data Center at the Johns Hopkins University Applied Physics Laboratory. A 25-minute flyby of the asteroid by NASA's Near Earth Asteroid Rendezvous (NEAR) spacecraft on June 27 has resulted in spectacular images of a dark, crater-battered little world assumed to date from the beginning of the solar system.

The Mathilde flyby is the closest encounter with an asteroid to date and the first with a C-type asteroid. The asteroid's mean diameter was found to be 33 miles which is somewhat smaller than researchers originally estimated.

A study of the asteroid's albedo (brightness or reflective power) shows that it reflects three percent of the Sun's light, making it twice as dark as a chunk of charcoal. Such a dark surface is believed to consists of carbon-rich material that has not been altered by planet-building processes, which melt and mix up the solar system's original building black materials.

Mathilde flyby images and updates can be obtained on the Mathilde home page at:

http://sd-www.jhuapl.edu/NEAR/Mathilde

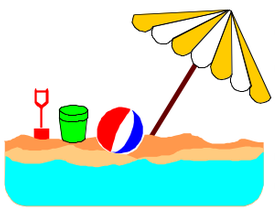
Cool Prelude to Summer

by Jim Buchanan

June weather occurrences made for a record setting month. There were four days of record low temperatures. The temperature went to 45 degrees on June 5, 48 degrees on June 7, and on June 8 and 9 went to 46 degrees. The old temperatures for those days was 47, 51, 52 and 49 degrees, respectively. This helped make the first nine days of the month much cooler than normal.

During the same period, the highest temperature recorded was only 69 degrees. The average daily high temperature was 62.3 degrees compared to a normal period average of 78.3 degrees.

From June 10 to the end of June temperatures were at or slightly above average. New record highs were recorded on June 25 and 26 with readings of 94 and 95 degrees. Even with the warmer days at the end of the month, temperatures were still an average of 2.5 degrees cooler than normal.



While there was rain fall recorded on two occasions of at least one-half inch, the monthly total was only 2.21 inches, which is 1.13 inches below normal. Measurable rain fell on eight days, which is average, with the greatest amount in a given 24 hour period being .71 of an inch. Thunderstorms occurred on five days. The highest winds, 43 mph, were recorded during a thunderstorm on June 18.

Daytime high temperatures during August generally average 83.5 degrees with nighttime lows averaging 67.3 degrees. There are usually eight days with measurable rain for an average rainfall total of 3.8 inches.

So far, the Atlantic hurricane season has been quiet. With the approach of August, there is normally an upswing in tropical storm activity.

Keeping this in mind, check to see that all emergency preparations have been made. Have on hand a supply of distilled water, lots of batteries, extra flashlights, blankets, a portable radio, high protein snacks, and plywood for boarding up windows.

These articles and any others stored in an emergency kit may not get used this year, there have been as many as four near misses from strong storms since August 1995. Make preparations now, including an escape route plan and avoid the storm-surge rush to evacuate low lying areas.

Household Wastes Can Be Toxic

Every home is full of common products that often can become dangerous if disposed of improperly. Included are such items as paints, stains and varnishes, household cleaners, hobby and craft chemicals, car batteries, motor oils and pesticides. The leftover contents of these products are considered household hazardous waste. If a product has one or more hazardous properties (corrosive, flammable, explosive or reactive, poisonous or toxic), it does not become any less hazardous when thrown away.

Products are labeled for consumer safety, read the label. There are non-toxic and less toxic alternatives to many household products. Always try to buy the least toxic product available that will get the job done. The product label should include either CAUTION (least toxic), WARNING (more toxic) or DANGER (most toxic).

How to dispose of household wastes

The risk of household hazardous waste in the home can be reduced by minimizing the amounts of potentially hazardous materials in the home. Buy only the amount needed to complete the project. Leftover materials, such as paint, motor oil and cleaning supplies, can be shared with neighbors or donated to local community groups or charities. Make sure the product is in its original container with the label intact.

It is important that household hazardous wastes are disposed of properly. Do not put them down the drain or throw them out in the trash. Never bury containers, empty or full, in the backyard or dump them by the side of the road. Most community waste facilities, such as landfills or sewage-treatment plants, are not designed to handle these materials and the toxic waste winds up in the air, soil or water.

Questions about proper disposal of any household wastes can be answered by local environmental agencies, public health offices or the product manufacturers.

Mission 2000

The Wallops Mission 2000 Implementation Plan will be unveiled by NASA Administrator Daniel Goldin, Senator Barbara Mikulski and other Congressional members from Virginia and Maryland during a program for employees 10 - 11 a.m., July 21, in Building D-10. All Wallops employees are encouraged to attend.

Balloon Flies in Alaska

An upper atmospheric payload was successfully carried aloft aboard a scientific balloon July 8 from Fairbanks, AK.

The 11.82 million cubic feet balloon carried an experiment for Dr. Geoffrey Toon from the Jet Propulsion Laboratory to measure the composition of the stratosphere using infrared solar absorption spectroscopy. The payload was recovered.

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